Pediatric Nutrition Surveillance

2009 Report

National Center for Chronic Disease Prevention and Health Promotion
Division of Nutrition, Physical Activity, and Obesity

This report summarizes selected data on child health and nutrition indicators received from states, U.S. territories, and Indian Tribal Organizations that contributed to the Centers for Disease Control and Prevention's (CDC) Pediatric Nutrition Surveillance System.

This report was developed by CDC's Division of Nutrition, Physical Activity, and Obesity in the National Center for Chronic Disease Prevention and Health Promotion.

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We gratefully acknowledge and thank all contributors to the Pediatric Nutrition Surveillance System (PedNSS). The efforts of state, territorial, and Indian Tribal Organization surveillance coordinators; informatics staff; and local clinic staff to collect data and use nutrition surveillance systems make the national PedNSS possible.

This report is available online at http://www.cdc.gov/pednss.

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Pediatric Nutrition Surveillance

The Pediatric Nutrition Surveillance System (PedNSS) is a public health surveillance system that monitors the nutritional status of low-income children in federally funded maternal and child health programs. Data on birthweight, anemia, breastfeeding, short stature, underweight, overweight, and obesity are collected for children who attend public health clinics for routine care, nutrition education, and supplemental food.

The goal of the PedNSS is to collect, analyze, and disseminate surveillance data to guide public health policy and action. PedNSS information is used to set public health priorities and to plan, implement, and evaluate nutrition programs.

Data are collected at the clinic level, aggregated at the state level, and then submitted to the Centers for Disease Control and Prevention (CDC) for analysis. A national nutrition surveillance report is produced, and an additional surveillance report is produced for each contributor. A *contributor* is defined as a state, U.S. territory, or Indian Tribal Organization (ITO).

In 2009, a total of 55 contributors, including 46 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and 6 ITOs, participated in the PedNSS (Figure 1). These contributors submitted data for nearly 9 million children from birth to age 4 years, which is nearly 4 million more children than in 2000. This gain is due to increases both in the number of contributors to the PedNSS and in the number of children reported by each contributor.

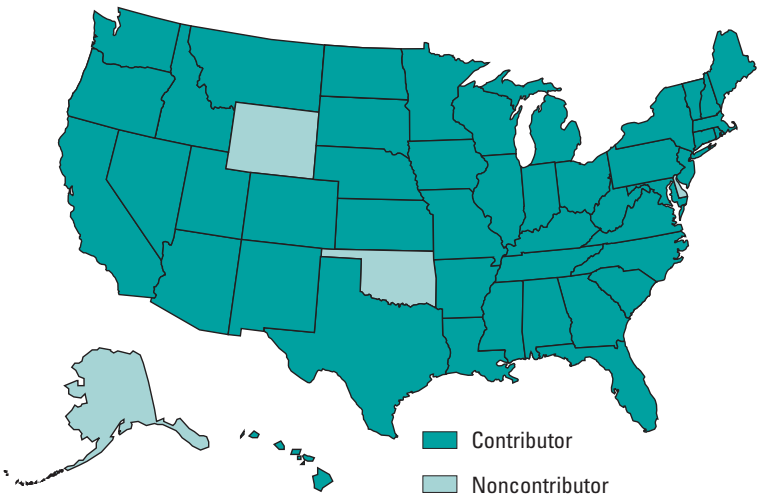
Fluctuations in the number of contributors or the demographic characteristics of the contributors' populations can affect trends. The number of PedNSS contributors differs slightly from year to year because some contributors did not provide data every year during the 10-year period from 2000–2009 (Table 1).

Data for the 2009 PedNSS were collected from children enrolled in federally funded programs that serve low-income children. These programs include the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (85.8%) and other programs (14.1%), such as the Early and Periodic Screening, Diagnosis, and Treatment program and the Maternal and Child Health Bureau Title V program. This report summarizes 2009 data and highlights data trends from 2000–2009.

Demographic Characteristics

Of the children in the 2009 PedNSS, 40.6% were Hispanic, 31.8% were non-Hispanic white, 18.7% were non-Hispanic black, 2.6% were Asian or Pacific Islander, 0.9% were American Indian or Alaska Native, and 5.5% were of multiple or unspecified races and ethnicities. From 2000 through 2009, the proportion of Hispanic children in the PedNSS increased from 28.3% to 40.6%. During the same period, the proportion of non-Hispanic white and non-Hispanic black children declined.

Figure 1. Contributors* to the 2009 Pediatric Nutrition Surveillance Report for children aged <5 years



* Includes the Cheyenne River Sioux Tribe (SD), the District of Columbia, the Inter Tribal Council of Arizona, the Navajo Nation (AZ), Puerto Rico, the Rosebud Sioux Tribe (SD), the Standing Rock Sioux Tribe (ND), the Three Affiliated Tribes (ND), and the U.S. Virgin Islands.

Table 1. Contributors to the Pediatric Nutrition Surveillance System, 2000–2009*

Contributor	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Alabama				■	■	■	■	■	■	■
American Samoa	■	■								
Arizona	■	■	■	■	■	■	■	■	■	■
Arkansas	■	■	■	■	■	■	■	■	■	■
California	■	■	■	■	■	■	■	■	■	■
Cheyenne River Sioux Tribe (SD)	■	■	■	■	■	■	■	■	■	■
Chickasaw Nation (OK)	■	■	■	■	■	■				
Colorado	■	■	■	■	■	■	■	■	■	■
Connecticut		■	■	■	■	■	■	■	■	■
District of Columbia	■	■	■	■	■	■	■	■	■	■
Florida	■	■	■	■	■	■	■	■	■	■
Georgia	■	■	■	■	■	■	■	■	■	■
Hawaii	■	■	■	■	■	■		■	■	■
Idaho	■	■	■	■	■	■	■	■	■	■
Illinois	■	■	■	■	■	■	■	■	■	■
Indiana	■	■	■	■	■	■	■	■	■	■
Inter Tribal Council of Arizona	■	■	■	■	■	■	■	■	■	■
Iowa	■	■	■	■	■	■	■	■	■	■
Kansas	■	■	■	■	■	■	■	■	■	■
Kentucky	■	■	■	■	■	■	■	■	■	■
Louisiana	■	■	■	■	■			■		■
Maine	■	■	■	■	■	■				■
Maryland	■	■	■		■	■	■	■	■	■
Massachusetts							■	■	■	■
Michigan	■	■	■	■	■	■	■	■	■	■
Minnesota	■	■	■	■	■	■	■	■	■	■
Mississippi								■	■	■
Missouri	■	■	■	■	■	■	■	■	■	■
Montana				■	■	■	■	■	■	■
Navajo Nation (AZ)	■	■	■	■	■	■	■	■	■	■
Nebraska	■	■	■	■	■	■	■	■	■	■
Nevada	■	■	■	■	■	■	■	■	■	■
New Hampshire	■	■	■	■	■	■	■	■	■	■
New Jersey	■	■	■	■	■	■	■	■	■	■
New Mexico	■	■	■		■	■	■	■	■	■
New York			■	■	■	■	■	■	■	■
North Carolina	■	■	■	■	■	■	■	■	■	■
North Dakota	■	■	■	■	■	■		■	■	■
Ohio	■	■	■	■	■	■	■	■	■	■
Oregon	■	■	■	■			■	■	■	■
Pennsylvania	■	■	■	■	■	■	■	■	■	■
Puerto Rico			■	■	■	■	■	■	■	■
Rhode Island							■	■	■	■
Rosebud Sioux (SD)	■	■	■	■	■	■	■	■	■	■
South Carolina	■	■	■	■	■	■	■	■	■	■
South Dakota	■	■	■	■	■	■	■	■	■	■
Standing Rock Sioux (ND)	■	■	■	■	■	■	■		■	■
Tennessee	■	■	■	■	■	■	■	■	■	■
Texas				■	■	■	■	■	■	■
Three Affiliated Tribes (ND)								■	■	■
U.S. Virgin Islands									■	■
Utah	■	■	■	■	■	■				■
Vermont	■	■	■	■	■	■	■	■	■	■
Virginia				■	■	■	■	■	■	■
Washington	■	■	■				■	■	■	■
West Virginia	■	■	■	■	■	■	■	■	■	■
Wisconsin	■	■	■	■	■	■	■	■	■	■
Wyoming		■	■	■	■	■				
Number of Contributors	**45**	**47**	**48**	**49**	**50**	**49**	**48**	**52**	**53**	**55**
Total Unique Child Records Submitted (x 1,000)	**5,019**	**4,943**	**5,519**	**6,359**	**6,930**	**7,118**	**7,599**	**7,996**	**8,165**	**8,939**

* Shaded blocks indicate years that data were contributed.

This demographic shift should be considered when interpreting PedNSS trends. Most children in the 2009 PedNSS were younger than age 2 years (57.1%); of those, 34.5% were younger than age 1 year and 22.6% were aged 12–23 months. The remaining children, 42.9%, were aged 2–4 years. The age distribution of children in the PedNSS has been stable since 2000.

Pediatric Health Indicators

Low Birthweight

Low birthweight (<2,500 grams) is an important determinant of neonatal and postneonatal mortality.[1] Low-birthweight infants who survive are at increased risk for health problems that include neurodevelopmental disabilities and respiratory disorders.[2] Of the infants in the 2009 PedNSS, 8.9% were low birthweight, compared with 8.2% of all U.S. infants.[3]

In the 2009 PedNSS, the prevalence of low birthweight was higher for black infants (13.2%) than for white (8.5%), Asian or Pacific Islander (8.3%), American Indian or Alaska Native (8.0%), or Hispanic (7.0%) infants. *Healthy People 2010* objective 16-10a proposes reducing low birthweight to no more than 5.0% of all live births.[4] The overall prevalence of low birthweight remained stable from 2000 (8.9%) through 2009 (8.9%) (Figure 2).

High Birthweight

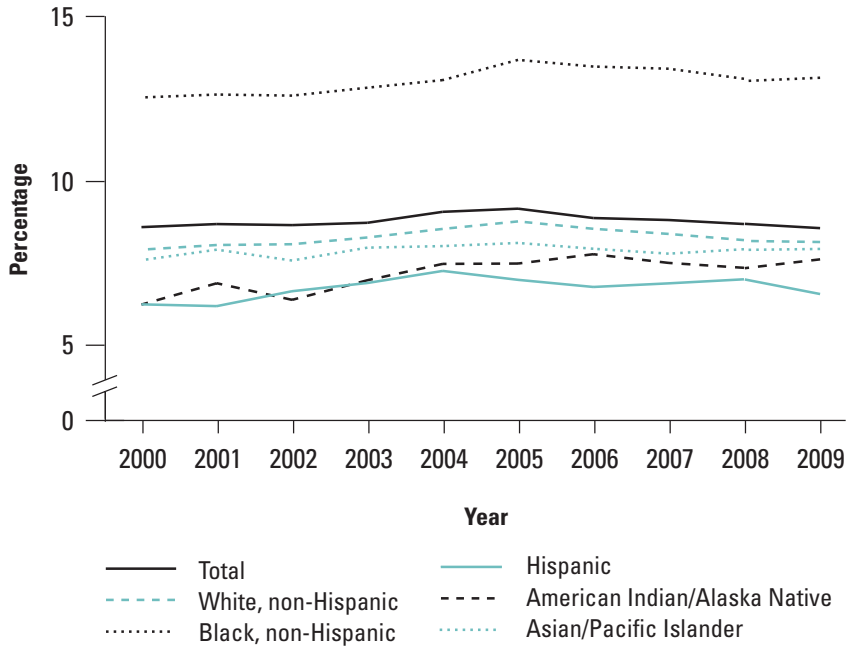
High birthweight (>4,000 grams) puts infants at increased risk for death and for birth injuries such as shoulder dystocia.[5] In the 2009 PedNSS, 6.4% of infants had high birthweights, compared with 8.3% in 2000. The prevalence was lower than in 2007 (7.7%), the most recent U.S. rate available.[6]

In 2009, the prevalence of high birthweight was higher for American Indian or Alaska Native (8.9%) infants than for white (7.4%), Hispanic (6.7%), Asian or Pacific Islander (4.5%), or black (3.9%) infants. The largest absolute decreases in high birthweight during 2000–2009 occurred among American Indian or Alaska Native (2.8%) and Hispanic (2.3%) infants.

Breastfeeding

The nutritional, immunologic, and economic advantages of breastfeeding are well recognized.[7] In the 2009 PedNSS, 61.7% of infants were ever breastfed, 27.0% were breastfed for at least 6 months, and 18.5% were breastfed for at least 12 months.*

Figure 2. Trends in prevalence of low birthweight,* by race and ethnicity



* Among infants born during the reporting period. Defined as birthweight <2,500 grams. *Healthy People 2010* proposes reducing low birthweight to 5% of all live births.
Source: 2009 National PedNSS Data Table 18D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

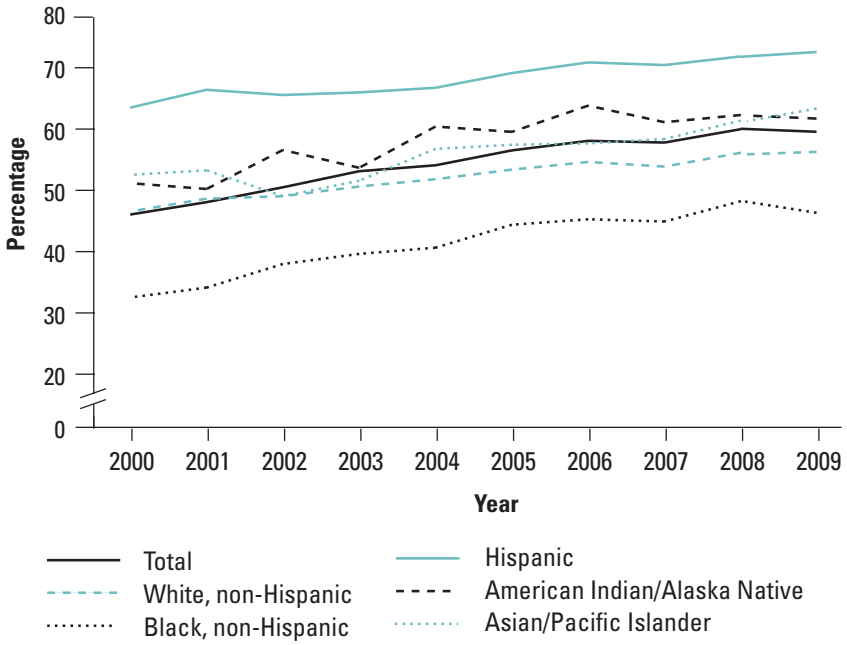
* Infants born during the reporting period before their mothers were surveyed are included in the ever breastfed analysis. Only children who had turned 6 months old during the reporting period are included in the breastfed at least 6 months analysis. Only children who had turned 12 months old during the reporting period are included in the breastfed at least 12 months analysis.

The 2009 PedNSS population failed to meet *Healthy People 2010* objectives 16-19 a–c, which are to increase the proportion of infants ever breastfed to 75.0%, the proportion of infants breastfed at 6 months to 50.0%, and the proportion of infants breastfed at 1 year to 25.0%.[4]

However, among PedNSS contributors, Colorado, Hawaii, Idaho, the Navajo Nation, Oregon, Utah, the U.S. Virgin Islands, and Washington met the *Healthy People 2010* objective for ever breastfeeding, and several other contributors came close (Table 2).

Nationally representative provisional data from the 2007 National Immunization Survey (NIS) indicate that 75.0% of all U.S. infants were ever breastfed, 43.0% were breastfed for 6 months, and 22.4% were breastfed for 12 months.[8]

Figure 3. Trends in percentage of infants ever breastfed,* by race and ethnicity



* Among infants born during the reporting period. *Healthy People 2010* proposes increasing the proportion of mothers who breastfeed their babies in the early postpartum period to 75%.
Source: 2009 National PedNSS Data Table 19D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

From 2000 through 2009, the absolute increase in the prevalence of breastfeeding initiation for infants in the PedNSS was 13.7%. The breastfeeding initiation rate was 48.0% in 2000. Improved breastfeeding rates were evident among all racial and ethnic groups (Figure 3). In 2009, Hispanic infants had the highest prevalence of breastfeeding initiation (74.4%), and black infants had the lowest prevalence (48.8%). Data from the NIS indicate that the proportion of infants ever breastfed in the United States increased from 70.9% in 2000 to 75.0% in 2007.[8]

The proportion of infants who were breastfed for at least 6 months was 19.7% in 2000 and 27.0% in 2009, an absolute increase of 7.3%. Increases in infants being breastfed for at least 6 months were evident among all racial and ethnic groups. Hispanic infants had the highest prevalence of breastfeeding for at least 6 months (38.4%), and black infants had the lowest prevalence (19.7%). Data from the NIS indicate that the proportion of infants who were breastfed for at least 6 months in the United States increased from 34.2% in 2000 to 43.0% in 2007.[8]

In 2004, the PedNSS began monitoring *exclusive breastfeeding*, defined as an infant receiving only breast milk. In 2009, a total of 23 PedNSS contributors† (42%) reported this supplementary data, which showed that 9.9% of infants were exclusively breastfed for at least 3 months.

† Contributors of supplementary breastfeeding data include Arizona, Arkansas, Florida, Idaho, Illinois, Indiana, Kansas, Maryland, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Dakota, Oregon, Rhode Island, Washington, West Virginia, Wisconsin, the District of Columbia, and the following ITOs: the Inter Tribal Council of Arizona and the Navajo Nation.

Table 2. State-specific prevalence of selected nutrition indicators for children aged <5 years, 2009 Pediatric Nutrition Surveillance System

Contributors	LBW*	HBW†	Ever Breastfed‡	Breastfed 6 Months§	Anemia¶	Short Stature**	Obesity††
Alabama	11.8	4.3	37.2	NA	19.0	6.2	14.4
Arizona	8.0	6.6	65.5	27.8	13.4	6.2	14.3
Arkansas	10.0	5.2	45.3	15.5	18.6	7.1	14.2
California	6.2	7.3	NA	NA	14.0	5.1	17.0
Cheyenne River Sioux (SD)	7.5	5.0	27.7	14.4	9.7	1.1	19.0
Colorado	9.3	4.5	76.4	29.6	13.1	7.5	9.0
Connecticut	8.9	7.0	64.9	26.9	8.7	3.4	16.0
District of Columbia	11.0	5.1	52.5	28.6	27.9	7.6	13.6
Florida	9.5	5.7	70.6	28.0	17.4	4.5	13.7
Georgia	10.1	5.2	50.3	20.6	14.2	6.1	14.2
Hawaii	9.3	6.5	84.4	41.3	11.9	6.4	9.3
Idaho	7.4	7.2	82.9	29.3	11.3	6.5	11.9
Illinois	9.1	7.0	63.1	24.0	11.2	6.7	14.6
Indiana	9.1	6.2	61.9	23.5	14.7	6.2	14.3
Inter Tribal Council of Arizona	6.5	8.7	66.1	24.0	14.1	5.3	24.2
Iowa	8.2	8.1	NA	NA	8.0	5.5	15.0
Kansas	8.5	6.4	69.8	20.9	10.1	6.3	13.2
Kentucky	9.9	6.3	37.8	12.2	12.9	6.0	15.8
Louisiana	11.9	3.5	29.0	12.8	20.7	8.6	12.4
Maine	NA	NA	NA	27.6	13.2	3.6	14.7
Maryland	10.1	5.6	60.1	29.2	22.4	5.8	15.8
Massachusetts	8.7	7.9	74.0	28.3	11.3	4.5	16.8
Michigan	9.4	6.8	53.5	18.5	15.0	5.6	13.7
Minnesota	7.4	8.7	73.6	32.3	10.9	4.9	13.1
Mississippi	NA	NA	NA	NA	16.2	9.4	13.9
Missouri	9.3	6.4	56.7	14.7	17.0	6.6	13.9
Montana	8.0	7.6	73.7	32.9	8.5	5.7	12.5
Navajo Nation (AZ)	7.0	7.2	75.4	33.9	NA	4.8	17.3
Nebraska	8.4	6.6	69.9	23.7	14.6	6.2	14.2
Nevada	8.2	6.0	61.5	25.6	9.8	6.5	13.9
New Hampshire	8.3	10.0	68.8	26.0	13.8	6.2	14.4
New Jersey	8.8	6.3	59.2	32.9	18.8	6.1	18.4
New Mexico	9.4	4.6	NA	NA	12.9	7.2	12.0
New York	8.9	6.6	74.4	38.8	11.8	4.3	14.4
North Carolina	9.9	6.5	60.5	21.9	13.4	5.5	15.2
North Dakota	8.0	8.4	58.7	20.3	9.3	4.5	14.1
Ohio	10.4	5.9	47.4	16.1	13.5	6.5	12.3
Oregon	6.8	9.7	91.2	43.2	14.1	5.0	15.0
Pennsylvania	9.9	6.2	45.3	20.2	20.6	6.4	12.0
Puerto Rico	NA	NA	55.3	NA	5.6	10.3	18.1
Rhode Island	9.2	7.7	60.3	21.4	17.1	6.0	16.2
Rosebud Sioux (SD)	4.5	8.7	57.4	NA	24.0	1.1	18.7
South Carolina	10.3	5.1	43.4	13.8	18.1	6.8	13.3
South Dakota	6.9	8.3	59.4	19.2	8.8	5.9	16.4
Standing Rock Sioux (ND)	6.7	10.0	42.6	NA	16.7	2.0	26.1
Tennessee	10.4	5.3	39.7	15.7	7.8	6.1	14.0
Texas	8.9	5.6	72.1	42.3	21.2	6.7	16.0
Three Affiliated Tribes (ND)	NA	NA	NA	NA	19.5	1.6	31.5
U.S. Virgin Islands	9.2	4.9	89.6	61.4	11.5	4.7	11.9
Utah	8.6	5.9	75.2	NA	11.2	7.4	8.8
Vermont	8.0	10.3	73.4	30.2	6.6	4.6	13.2
Virginia	10.0	6.0	58.4	22.0	15.8	6.1	18.0
Washington	7.1	9.2	85.7	39.5	10.4	5.0	14.4
West Virginia	9.8	5.8	44.8	13.5	4.7	5.1	13.4
Wisconsin	8.6	7.7	66.9	27.5	11.1	5.6	13.7
National PedNSS	8.9	6.4	61.7	27.0	14.9	6.0	14.7

Abbreviations: LBW = low birthweight; HBW = high birthweight; NA = not available.

* Defined as birthweight <2,500 grams.

† Defined as birthweight >4,000 grams.

‡ Infants born during the reporting period before their mothers were surveyed are included in analysis.

§ Infants who turned 6 months of age during the reporting period are included in analysis.

¶ Adjusted for altitude. For children aged 6–23 months, hemoglobin (Hb) is <11.0 g/d or hematocrit (Hct) is <32.9%. For children aged 2–4 years, Hb is <11.1 g/dL or Hct is <33.0%.

** Based on the 2000 CDC growth charts. Defined as <5th percentile length-for-age for children younger than age 2 years or height-for-age for children aged 2 years or older.

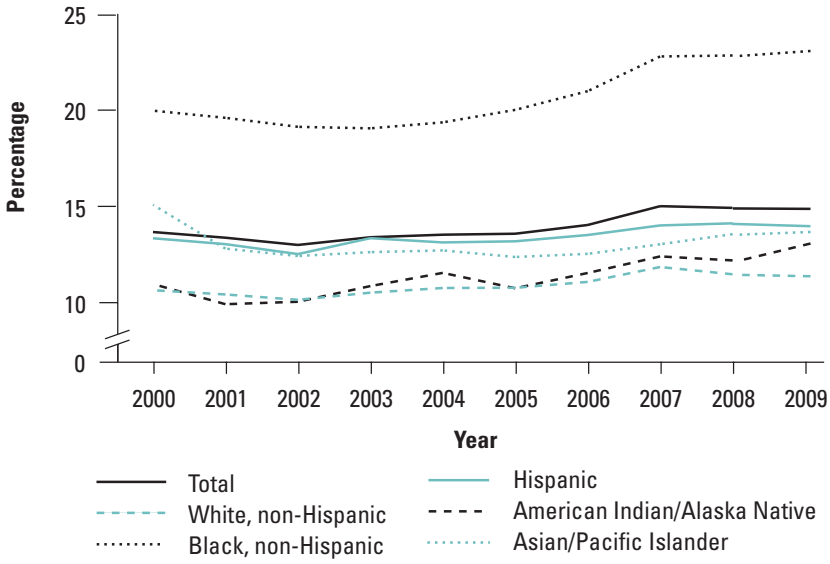
†† Based on the 2000 CDC growth charts. Defined as ≥95th percentile BMI-for-age for children aged 2 years or older.

Data from the NIS indicate that 33.0% of infants in the United States were exclusively breastfed for at least 3 months in 2007. Exclusive breastfeeding has a strong protective effect against lower respiratory tract infections, middle ear infections, eczema, and childhood obesity.[9]

Anemia

Anemia (low hemoglobin or low hematocrit)[‡] is an indicator of iron deficiency, which is associated with developmental delays and behavioral problems in children.[10,11] In the 2009 PedNSS, the prevalence of anemia was 14.9%. The highest prevalence was among children aged 6–23 months (17.8%) and those aged 12–17 months (18.2%). The lowest prevalence was among children aged 3–4 years (11.2%).

Figure 4. Trends in prevalence of anemia* among children aged <5 years, by race and ethnicity



* Defined as hemoglobin concentration or hematocrit level <5th percentile. (CDC. Recommendations to prevent and control iron deficiency in the United States. *MMWR Recommendations and Reports* 1998;47[RR-3]:1–30).

Source: 2009 National PedNSS Data Table 18D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

The overall prevalence of anemia among children in the PedNSS increased slightly from 13.7% in 2000 to 14.9% in 2009. During this 10-year period, the overall prevalence of anemia declined to 13.0% in 2002 but increased in subsequent years.

The prevalence of anemia varied among racial and ethnic groups in the PedNSS. In 2009, the highest prevalence was among black children (23.1%) and the lowest prevalence was among white children (11.4%). From 2000 through 2009, the largest increase in anemia was among black children (3.1%). The prevalence of anemia declined slightly among Asian or Pacific Islander children (Figure 4).

Short Stature

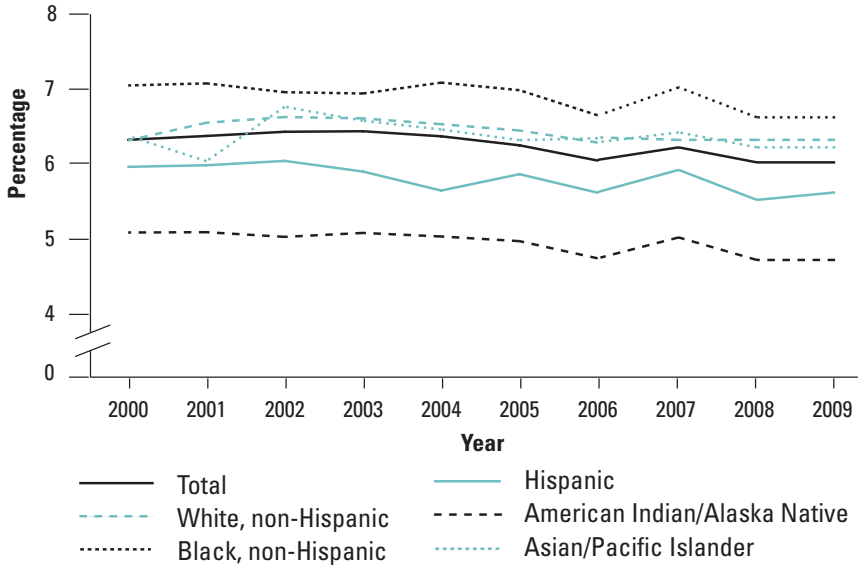
Short stature[§] (low length or height for a child's age) may reflect the long-term health and nutritional status of a child or a population.[13] Although short stature can be associated with short parental stature or low birthweight,[13] it also can result from growth retardation because of chronic malnutrition, recurrent illness, or both. In the 2009 PedNSS, 6.0% of children from birth to age 4 years were of short stature, compared with 3.7% of all U.S. children of the same age.[14]

‡ Defined as hemoglobin (Hb) concentration or hematocrit (Hct) level <5th percentile. Children aged 6–23 months are considered anemic if their Hb concentration is <11.0 g/dL or their Hct level is <32.9%. Children aged 2–4 years are considered anemic if their Hb concentration is <11.1 g/dL or their Hct level is <33.0%. Values are adjusted for altitude. Hb concentration and Hct level are not reported for children younger than age 6 months.[12]

§ Based on sex-specific percentiles from the 2000 CDC growth chart for the United States. For children younger than age 2 years, short stature is defined as <5th percentile of length-for-age. For children aged 2–4 years, short stature is defined as <5th percentile of height-for-age.

Compared with the general population, the prevalence of short stature was higher in the PedNSS population, which may reflect the nutritional risk of children participating in the WIC program. The prevalence of short stature in the 2009 PedNSS was above both the expected level (5.0%) and the *Healthy People 2010* objective 19-4 of 5.0% among low-income children from birth to age 4 years.[4] Sixteen contributors achieved the *Healthy People 2010* objective of 5.0% in 2009 (Table 2).

Figure 5. Trends in prevalence of short stature* among children aged <5 years, by race and ethnicity



* Defined as <5th percentile length or height-for-age according to the 2000 CDC growth charts. *Healthy People 2010* proposes reducing short stature among low-income children aged <5 years to 5%.
Source: 2009 National PedNSS Data Table 18D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

The prevalence of short stature among children in the PedNSS remained stable from 2000 (6.0%) through 2009 (6.0%). Some variation was evident among racial and ethnic groups. Short stature increased among white and Hispanic children and decreased among Asian or Pacific Islander, black, and American Indian or Alaska Native children (Figure 5). In 2009, the highest prevalence of short stature was among black infants younger than age 1 year (10.9%), which may reflect the high prevalence of low birthweight among this group (data not shown).

Underweight

Data from contributors on underweight[¶] (low weight-for-length or body mass index[**] [BMI] for age) in children from birth to age 4 years indicate that acute malnutrition was not a public health problem in the PedNSS population. In 2009, the prevalence of underweight (4.3%) was less than the expected level (5.0%). The prevalence of underweight for all U.S. children in this age group was 3.4%.[14]

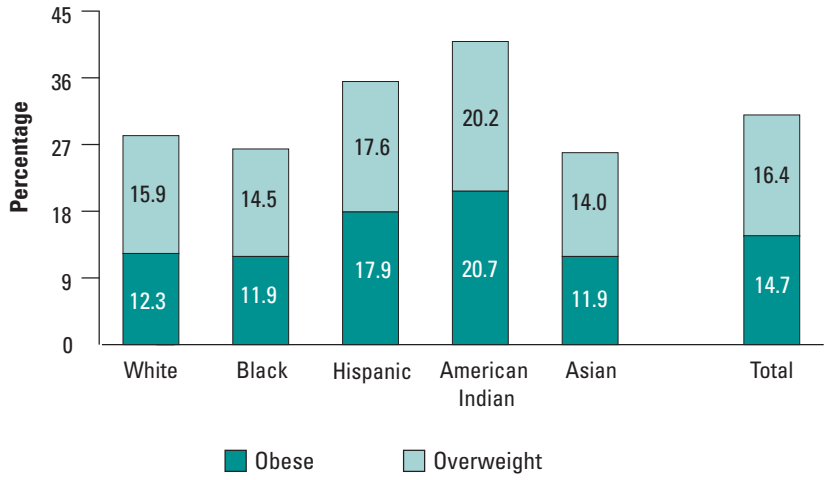
The highest prevalence of underweight in the PedNSS was among Asian or Pacific Islander (5.9%) and black (5.6%) children. Black infants younger than age 1 year had an underweight rate of 7.6%, which may reflect the high rate of low birthweight in this group. The overall prevalence of underweight among children in the PedNSS decreased from 5.4% in 2000 to 4.3% in 2009.

Overweight and Obesity

Overweight[††] and obesity[‡‡] in young children have increased in recent decades, and the associated health consequences call for preventive efforts.[15] The Expert Committee on the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity recommends the use of two cutoff points to screen for overweight and obesity in children aged 2 years or older.[16] Children with a BMI-for-age at

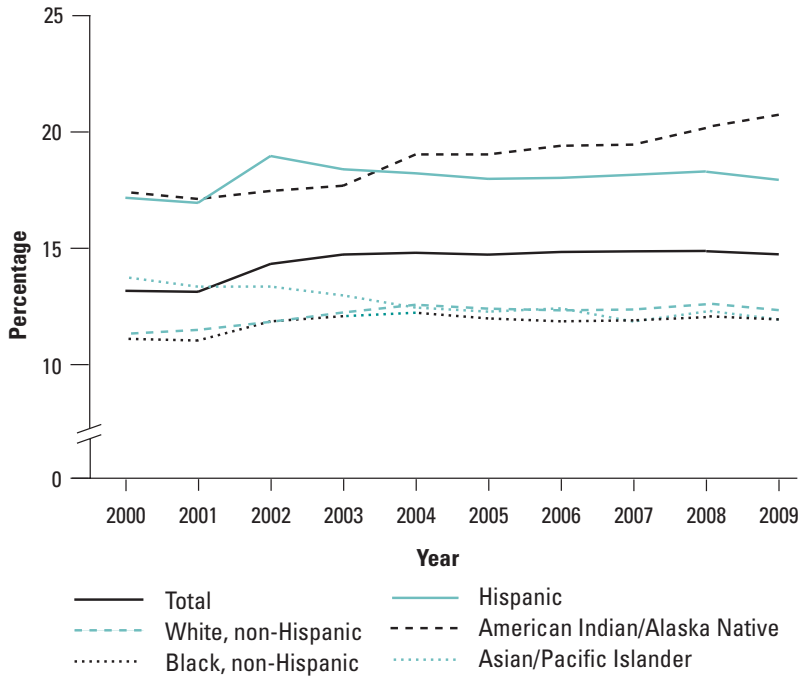
¶ Based on sex-specific percentiles from the 2000 CDC growth chart for the United States. For children younger than age 2 years, underweight is defined as <5th percentile of weight-for-length. For children aged 2 years or older, underweight is defined as <5th percentile of BMI-for-age.
** BMI is calculated as follows: Weight (kg) ÷ Stature (cm) × 10,000 or Weight (lb) ÷ Stature (in) × 703.
†† Based on sex-specific percentiles from the 2000 CDC growth chart for the United States. For children aged 2 years or older, overweight is defined as the 85th–95th percentile of BMI-for-age.
‡‡ Based on sex-specific percentiles from the 2000 CDC growth chart for the United States. For children aged 2 years or older, obesity is defined as ≥95th percentile of BMI-for-age.

Figure 6. Prevalence of obesity* and overweight† among children aged 2–5 years, by race and ethnicity



* Defined as ≥95th percentile BMI-for-age according to the 2000 CDC growth charts.
† Defined as 85th–95th percentile BMI-for-age according to the 2000 CDC growth charts.
Source: 2009 National PedNSS Data Table 8D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

Figure 7. Trends in prevalence of obesity* among children aged 2–5 years, by race and ethnicity



* Defined as ≥95th percentile BMI-for-age according to the 2000 CDC growth charts.
Source: 2009 National PedNSS Data Table 18D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

or above the 95th percentile are considered obese, and those with a BMI-for-age in the 85th–95th percentile are considered overweight.[16]

In the 2009 PedNSS, the prevalence of obesity among children from birth to age 4 years was 14.7%, compared with 12.4% for U.S. children aged 2–5 years in 2003 through 2006.[17] In the PedNSS, the highest prevalence of obesity was among American Indian or Alaska Native (20.7%) and Hispanic (17.9%) children. The lowest prevalence was among white (12.3%), black (11.9%), and Asian or Pacific Islander (11.9%) children (Figure 6).

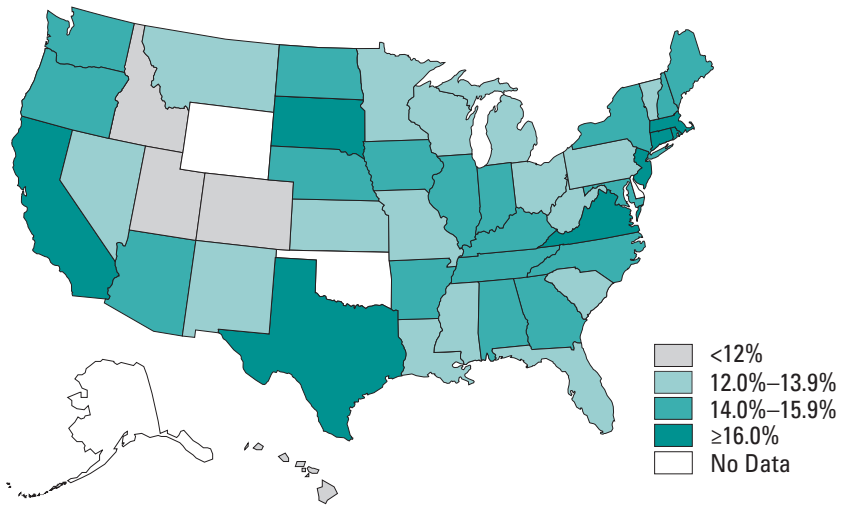
The prevalence of obesity among children from birth to age 4 years increased from 13.2% in 2000 to 14.7% in 2009 (Figure 7). During this 10-year period, obesity increased among all U.S. racial and ethnic groups except Asians or Pacific Islanders.

However, overall obesity rates have remained stable since 2003 (14.7%), and this trend was observed among all racial and ethnic groups except American Indians or Alaska Natives. This group experienced a 3.0% increase in the prevalence of obesity from 2003 through 2009.

Among all contributors, only Colorado, Hawaii, Utah, and the U.S. Virgin Islands had a prevalence of obesity less than 12.0%, and 15 contributors had a prevalence of obesity of 16.0% or higher (Figure 8).

Although the map shows no clear geographic pattern of obesity prevalence, six ITOs that participated in the PedNSS were among those contributors with the highest prevalence of obesity. No contributor had a prevalence of obesity at or less than the expected level of 5.0% (Table 2).

Figure 8. Prevalence of obesity* among children aged 2–5 years, by contributor†



* Defined as ≥95th percentile BMI-for-age according to the 2000 CDC growth charts; 5.0% of children are expected to be above the 95th percentile.

† Includes the District of Columbia (13.6%), Puerto Rico (18.1%), the U.S. Virgin Islands (11.9%), and the following ITOs: the Cheyenne River Sioux Tribe (SD) (19.0%), the Inter Tribal Council of Arizona (24.2%), the Navajo Nation (AZ) (17.3%), the Rosebud Sioux Tribe (SD) (18.7%), the Standing Rock Sioux Tribe (ND, SD) (26.1%), and the Three Affiliated Tribes (ND) (31.5%).

Source: 2009 National PedNSS Data Table 6D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

Pediatric Behavioral Indicators

Television Viewing

To prevent obesity and a variety of other problems during childhood, the American Academy of Pediatrics (AAP) recommends that parents limit the amount of time that children spend watching television or other media to no more than 1–2 hours per day for children aged 2 years or older. AAP also discourages exposure to any television for infants and children younger than age 2 years.[18]

In 2004, the PedNSS began monitoring the proportion of children from birth to age 4 years who view 2 hours or less of television (including videotapes and DVDs) per day. Mothers of children in this age range report data on their children's television viewing.

In 2009, a total of 24 PedNSS contributors[§§] (44%) reported supplementary television viewing data, which indicated that 77.3% of children aged 2–4 years viewed 2 hours or less of television per day. The proportion of children meeting the AAP's recommendation varied by race and ethnicity. Rates were lowest among black (67.9%) and Hispanic (72.7%) children and highest among white (84.4%) children.

Smoking in the Household

Exposure to secondhand tobacco smoke is a risk factor associated with low birthweight, sudden infant death, poor growth, and decreased lung function in young children.[19] In 2004, the PedNSS began monitoring smoking in the household, defined as whether anyone in the child's household currently smokes inside the home. Mothers of children report these data.

In 2009, a total of 32 PedNSS contributors[¶¶] (58%) reported supplementary data showing that 10.2% of children were exposed to household smoke. Exposure was highest for white (19.3%) and black (10.7%)

§§ Contributors of supplementary television viewing data include Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Rhode Island, South Carolina, Utah, West Virginia, Wisconsin, the District of Columbia, the U.S. Virgin Islands, and the following ITOs: the Inter Tribal Council of Arizona, the Cheyenne River Sioux (SD), the Rosebud Sioux (SD), the Standing Rock Sioux (ND), and the Three Affiliated Tribes (ND).

¶¶ Contributors of supplementary data on exposure to household smoking include Arizona, Arkansas, California, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Rhode Island, South Carolina, Utah, Virginia, West Virginia, Wisconsin, the District of Columbia, the U.S. Virgin Islands, and the following ITOs: the Inter Tribal Council of Arizona, the Cheyenne River Sioux Tribe (SD), the Navajo Nation (AZ), the Rosebud Sioux Tribe (SD), the Standing Rock Sioux Tribe (ND), and the Three Affiliated Tribes (ND).

children and lowest among Asian or Pacific Islander (4.7%) children. Exposure among children younger than age 1 year was lower (9.2%) than among children from birth to age 4 years (11.1%).

Pediatric Health Progress Review

Advances in nutrition and health indicators were observed in the PedNSS population from 2000 through 2009 (Figure 9). The prevalence of high birthweight decreased, with the greatest improvement occurring among American Indian or Alaska Native and Hispanic children. Substantial improvements occurred in the prevalence of infants ever breastfed. The largest improvement in the prevalence of ever being breastfed occurred among black children. Overall, short stature remained stable during 2000–2009.

Figure 9. Changes in infant and child health status, 2000–2009

The 2009 PedNSS also indicated areas of concern. Although the low birthweight rate was stable during 2000–2009, it remained high. The *Healthy People 2010* objective to reduce the prevalence of low birthweight to 5.0%[4] continues to be unmet. The prevalence of anemia stayed about the same, but it remains high among all racial and ethnic groups.

Obesity is a major public health problem that has steadily increased in the United States. The proportion of children from birth to age 4 years who were obese increased by 1.5 percentage points in 2009 compared with the proportion in 2000. This change is a relative increase of about 11.4%.

Although Hispanic and American Indian or Alaska Native children had the highest prevalence of obesity, increases occurred among all racial and ethnic groups except Asians or Pacific Islanders. Although overweight and obesity rates increased among children from birth to age 4 years during 2000–2009, the prevalence has remained stable since 2003.

While advances have been made in breastfeeding initiation, few contributors achieved the *Healthy People 2010* objective of 75% of infants ever being breastfed.[4] The prevalence of breastfeeding remained lowest for black infants.

Recommendations

The PedNSS data indicate that national and state public health programs are needed to support the following actions:

- Prevent low birthweight by promoting preconception nutrition care and outreach activities to identify pregnancy in its early stages.
- Foster early entry into comprehensive prenatal care, including the WIC program.
- Promote and support breastfeeding initiatives in public health programs, medical care systems, work sites, and communities.
- Identify successful programs and policies to support exclusive breastfeeding, especially among populations with low prevalence.
- Promote adequate dietary iron intake and screening of children at risk for iron deficiency.
- Implement interventions in specific target areas to prevent obesity and chronic diseases that have been recommended by CDC's Division of Nutrition, Physical Activity and Obesity, including
  - Increasing breastfeeding initiation, duration, and exclusivity.
  - Increasing physical activity.
  - Increasing the consumption of fruits and vegetables.
  - Decreasing the consumption of sugar-sweetened beverages.
  - Reducing the consumption of high-energy-dense foods (foods high in calories per gram weight).
  - Decreasing television viewing.

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